



MAGAZINE

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CONTENTS

Heavy Organics Quiz	182
Men with Ideas—James Foy	186
People and Events	188
Modern Marvels—Electronic Computer	194
Central Council	196
The First Escape of the War, by Rupert Barry	200
Pictures from Overseas	206
News in Pictures	208
My Underwater World, by A. S. Irvine	213

FRONT COVER: Amberley, Surrey,
by R. Grant (Nobel Division)

OUR CONTRIBUTORS



Rupert Barry, who writes the story of his escape after capture by Germans south of Dunkirk in 1940, is safety officer to Lstock and Middlewich Works at Alkali Division. A regular officer, he was commissioned into the Oxfordshire and Buckinghamshire Light Infantry, but served for a time with the Grenadier Guards and the Parachute Regiment. Most of his 23 years' service was spent abroad—in Egypt (three times), India, Burma, Palestine, Greece, Cyprus and Europe. He is a prominent character in P. R. Reid's well-known escape book *The Colditz Story*.



A. S. Irvine has been in charge of Alkali Division's Information Services since 1950. Interested in both swimming and rowing, he was a prominent oarsman at Oxford University in the 1930s, is a member of Leander Club and is chairman of Northwich Regatta.

Heavy Organics Quiz

Last January a new I.C.I. Division into being when a separate organisation was hived off from Billingham Division. What was wrong with the old set-up? Why was the change necessary? What products does the new Division make? The Division's first chairman, Dr. S. W. Saunders, here answers these questions.

EDITOR: My first question, Dr. Saunders, is a rather elementary one. Why did you choose the name Heavy Organic Chemicals for your new Division? If you will forgive my saying so, it is not very inspiring.

SAUNDERS: I can't help agreeing with you. But can you think of a better name? We couldn't. Petrochemicals is perhaps the best descriptive label of our work, since oil is the starting point of our products. But that is the name of another company, one of our competitors. You can't have two rivals in the same line of business both calling themselves Petrochemicals. Moreover, we don't sell to the public, but to other chemical manufacturers. Our customers therefore are technical people, and to them the Heavy Organic Chemicals label says something. "Organic" because our products are compounds of carbon, which is what organic chemicals are. And "Heavy" because we deal in large quantities, that is to say in hundreds or thousands of tons a year as distinct from, for example, Dyestuffs and Pharmaceuticals Divisions, where demand is of the order of tens of tons for the more specialised lines.

EDITOR: Another elementary question. Why was it necessary to create a new Division at all? What was wrong with the old set-up? Why go in for the higher overheads which a separate organisation must surely entail?

SAUNDERS: The fundamental reason for the change is really very simple. It is that the products of Billingham Division were becoming too diverse for any one body of men at the top—by which I mean the Divisional

board of directors and other senior departmental heads—to handle with the efficiency which industry today demands if it is to make the necessary progress. Obviously, if a board has too much on its plate there is a danger of having to skim the study, the thinking and the planning. I don't say that this had happened—indeed, Billingham Division did exceedingly well. But what I do say is that the present set-up will enable my colleagues and myself and those of Billingham Division to get down to the job of planning and directing our separate affairs without our having to give time and attention to other lines of business. This must be all to the good. After all, apart from the supply of high-pressure hydrogen there is really very little in common between fertilizers, acids and building products—the main business of Billingham—and oil derivatives, which are what we sell. The cleavage is a natural one.

EDITOR: What is the approximate size of the hive-off resulting from this cleavage?

SAUNDERS: Broadly, one-third of Billingham has become Heavy Organic Chemicals, but we have a higher proportion of staff to payroll—in fact the numbers will be about equal.

EDITOR: The figure of one staff for one payroll worker is interesting. Do you regard it as unusual for the petrochemicals business?

SAUNDERS: By no means. In the newer chemical industries like ours, the plants are very suitable for automatic control and need fewer people to operate

them in relation to their output. To expand the business, however, needs more technical and commercial staff than do some of the older plants.

EDITOR: You still haven't answered my question about the split leading to higher overheads.

SAUNDERS: Of course there will be some increase in overheads. But not as much as you would suppose. It will mean the employment of about 30–40 more people than would have been employed if there had been no split. This is not a great deal, and it should be amply repaid in greater efficiency.

EDITOR: Was the split difficult from the point of view of deciding who was to go where?

SAUNDERS: Not really. You see most of us have been working here for a long time together, and this was just another problem to be solved; naturally there have been some difficulties, but not as many as you might think. In most cases the existing organisation automatically decided which people we would take with us. It was only in the departments common to both sides of the business—distribution, supply, accounts, patents, library services and so on—that delicate problems were raised. And even here the choice was generally fairly clear, although the complete separation has not yet been finalised.

EDITOR: Where will your headquarters be?

SAUNDERS: This has not yet been decided, but they may well be at Wilton on the other side of the River Tees, where we have most of our plants and where there is more room for expansion; but new offices have first to be built for us.

EDITOR: How does this square up with the fact that a new office block is at present in the course of construction at Billingham? Surely this plus the old offices could house the present staff of both Divisions?

SAUNDERS: True; although there would still be many people working in huts with no room for expansion. It is wise to look ahead. We believe that within five years at the present rate of growth of both Divisions all office accommodation now planned both at Billingham and at Wilton will be fully taken up.

EDITOR: Can we now go back to the early days? When did Billingham, created to make fertilizers, first get mixed up with oil, and why?

SAUNDERS: That takes us back a long way—more than thirty years. In fact, to 1926. In those early years Billingham did pilot plant work on a process which had been taken to the laboratory stage first in Germany. This was to make oil from coal by hydrogenation, i.e. by adding hydrogen to coal. This work



was started because coal was cheap. We knew how to make and use pure high-pressure hydrogen, we were quite knowledgeable on high-pressure techniques, and there was a good chance of the scheme for making oil (in this case petrol) from coal being successful on a commercial basis. It was because Billingham had the high-pressure hydrogen and the techniques that we first got mixed up, as you call it, with the oil business.

EDITOR: *From then on, was expansion fairly straightforward and rapid?*

SAUNDERS: Not quite straightforward. You see, nobody had ever hydrogenated coal on any scale other than in the laboratory. The people at Billingham were the first to do this on a larger scale. There was therefore an enormous amount of new ground to cover. A small plant hydrogenating 10 tons of coal a day was first built, and from this much information was obtained on how to design a commercially sized plant. In addition, information on cost of operation (should a large plant be erected) was much more reliable than the estimates made from laboratory work. Under the leadership of Kenneth Gordon, who was the inspirer and the driver of this effort, all this was done, and very well done too, so that by 1931 enough information was available to design a commercial plant.

EDITOR: *But there was a government preference on home-produced oil, was there not, and this surely had some effect?*

SAUNDERS: Yes indeed. The government announced in 1933 that it would guarantee a preference of 4d. a gallon on petrol produced from indigenous raw materials. This announcement was followed almost immediately by one from the I.C.I. Board saying that they would erect a commercial plant at Billingham for making petrol from coal. The plant began operation



Night time at the Heavy Organic Chemicals carbonylation plant at Billingham. This plant produces higher alcohols, widely used in the plastics industry.

in 1935, being officially opened by the then Prime Minister, Mr. Ramsay MacDonald. This was really the beginning of the large-scale operations which have led ultimately to Heavy Organic Chemicals Division. The two men mainly responsible were Kenneth Gordon, whom I mentioned earlier and who looked after the chemistry, and Ewart Smith (now Sir Ewart Smith), one of the present Deputy Chairmen of the Company, who did the engineering. Unfortunately Kenneth Gordon died a few years ago.

EDITOR: *The plant operated throughout the war, producing a special aviation petrol, did it not?*

(Continued on page 193)

High-pressure injectors used in the manufacture of chemicals from creosote oil



Men with Ideas—5

James Foy

A CERTAIN kind of blasting cartridge made at the Ardeer factory of Nobel Division has a paper case with lines of perforations cut in it.

The perforations used to be made by running the paper under steel rollers fitted with diagonal lines of steel needles, but when the needles wore the paper was torn and production was held up. Replacing a worn or broken needle was a long and difficult job.

James Foy, a chargehand fitter in the Misk blasting unit, thought he could cure these troubles. His idea seemed so simple that he could hardly believe it was the solution. But when he made a prototype it worked, and he submitted it to the Suggestion Scheme committee. The result: an award of £100 and a further £10 for the Division's best suggestion of the year.

James Foy's idea was to use wooden rollers in place of the steel ones. Set into the face of these wooden rollers are brass plates carrying rows of panel pins protruding like teeth from a comb. Individual pins, or whole rows of them, can easily be replaced if there is trouble, and the fitter who used to stand by whenever the perforating machines were in operation is now released for useful work elsewhere.



People and events . . .

Wilton's New Training Centre

Sir Ewart Smith had some trenchant things to say of education, technical and otherwise, when he opened the new Training Centre at Wilton last month.

"There is a great fallacy in the idea that the building of beautiful new schools, new technical colleges and universities will create good education for the people," he said. "It does nothing of the kind, unless you have a sufficiency of good, well-trained and dedicated teachers to make full use of those facilities." Wilton, said Sir Ewart, had been very wise in first creating a teaching staff and then providing better facilities for them to use.

When the word "education" was used in I.C.I., he said, it meant education in the widest sense. It included the humanities as well as the sciences, but it included them in balance. He thought Britain had been tending to run off the rails in encouraging over-specialisation and in starting people on specialist courses too young.

Dozens of overalled apprentices saw Sir Ewart, accompanied by the Wilton Council chairman, **Mr. J. C. H. McEntee**, and about 100 I.C.I. guests, receive the key of the new centre from student apprentice **J. Etherington** and formally open the door. Inside he unveiled a commemorative plaque, engraved in titanium by a 16-year-old apprentice, **B. Williamson**.

★ ★ ★

When **Mr. V. Goodsell**, chairman of the workers' representatives on the Wilton Site Council, moved a vote of thanks to Sir Ewart after the opening ceremony, he came out with a suggestion for a new kind of incentive. Why not hang a picture of the I.C.I. boardroom in a prominent position in the

Training Centre, he suggested. It would serve as a reminder to the boys passing through the centre that they could eventually occupy one of the director's chairs—even the Chairman's.

The Training Centre will be the hub of a wide circle of training activities for all grades of employees, from apprentices to foremen and senior staff. At the moment 379 craft apprentices, 73 student apprentices and 192 laboratory assistants are being trained by a staff of 32. Two hundred people in the works give lectures and other help.

During 1958 some 2700 adult employees will be taking part in 21 different types of training courses held at the Centre.

Selling Chemicals in the U.S.A.

THE question of how I.C.I. can get a bigger share of the U.S. chemicals market was discussed by **Mr. K. W. Palmer** in a talk he gave to Billingham Division Council. Mr. Palmer was president of I.C.I. (New York) and is now Technical Managing Director of the new Heavy Organic Chemicals Division.

"It is true the tariff barrier continues to hold back a lot—perhaps most—of our products," he said. "But there is still room to go for increased business. I personally think it would do us a lot of good to try harder and harder. I am sure our competitive

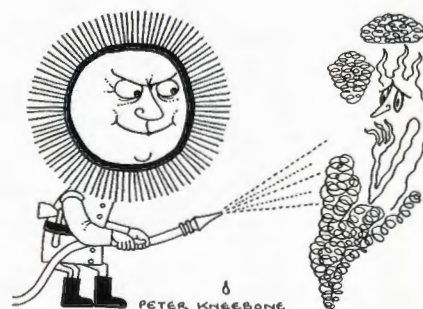
edge would be sharpened in the attempt."

Mr. Palmer spoke of the eagerness with which big American companies are ready to take up licences for good British inventions. The fees a British company got in this way could sometimes be equivalent to the profit derived from a very big investment in plant in this country.

Power of the Sun

DOES the sun put the fire out? Some people say, quite seriously, that it does. **Mr. J. B. Andrew** of Dyestuffs Division's Dyehouse Department was so amused when his wife told him this that he wrote a short humorous talk about it for the B.B.C.

The B.B.C. accepted the talk and



Mr. Andrew later broadcast it in the morning programme "Today." But he didn't deter the believers. Since then a number of people have come forward to tell him, quite categorically, that the sun does put the fire out!

'Terylene' in Japan

'TERYLENE', under the name 'Tetoron,' is now being made in Japan. The Toyo Rayon Co., one of I.C.I.'s two licencees in Japan, officially opened

their plant at Mishima, 65 miles south-west of Tokyo, on 7th April.

The plant was completed in what must be record time—the agreement with I.C.I. had been signed only 14 months before. The starting material is terephthalic acid purchased from outside, while the Wilton process starts a stage earlier with *p*-xylene. Three teams of Toyo Rayon chemists and engineers visited Wilton last year.

Sir Alexander Fleck, who was making a visit to I.C.I. (Japan), toured



A chopsticks lesson for the Chairman in Japan

the plant at the invitation of Mr. Tashiro, chairman of Toyo Rayon, only three days after the opening ceremony. With **Mr. G. H. Dickson**, chairman of I.C.I. (Japan), and **Mr. Takahashi** from the Tokyo office he was shown the polymer and fibre sides of the plant.

Present production from the plant is five tons of 'Tetoron' a day, which is expected to increase to 30 tons a day in a few years.

Fund-raising Humbugs

A CHARGEHAND electrician at General Chemicals Division's Castner-Kellner Works, **Mr. Charles Littlemore**, is the moving spirit of a fine scheme that has raised more than £500 for cancer research since 1953.

Some years ago he lost two close relatives from cancer. This determined him to do something practical to help fight the disease. The way he chose is original and highly successful: he makes and sells old-fashioned humbugs. To be more accurate, he and his helpers do. For Mr. Littlemore makes it clear that although he thought of the idea and provides working space in his own home, he would find it impossible to carry on without his friends

and relations. Eight friends in the works, and others outside, help him.

Last winter alone they used 30 cwt. of sugar and turned out humbugs at the rate of 100 lb. a week to be sold at 9d. a quarter. This brought in £160, and Mr. Littlemore received a personal letter of thanks from Lord Cohen of Birkenhead, president of the South-west Lancashire committee for the British Empire Cancer Campaign.

Old-established Agents—1

SOMETHING like a quarter of I.C.I.'s total exports are sold not directly by the Company but through agents.

In the smaller markets sales are not big enough to support a separate I.C.I. organisation. In other areas, such as Scandinavia, Central America and the Caribbean, it is more practicable to have a number of agents selling different products than a central I.C.I. selling company.

Many agencies are family businesses, handed on from father to son, which can trace back their connections with I.C.I. for many years. This series introduces some of I.C.I.'s oldest-established agents—first of all in Sweden.

Just over half a century ago two Swedes living in New York struck up a lifelong friendship. They were **J. T. Bruhn** and **Gideon Sundbäck**, and from their friendship grew the sale of zip fasteners in Europe.

Sundbäck, inventor of the zip, asked Bruhn to sell the invention in England. Just before the first world war ended Bruhn succeeded in interesting Kynoch Works in Birmingham in the idea.

How Kynoch's

bought the world patents for the fastener (except in the U.S.A. and Canada) is a story that has been told before. What is probably not known so well is that Bruhn's association with 'Lightning' fasteners still continues.

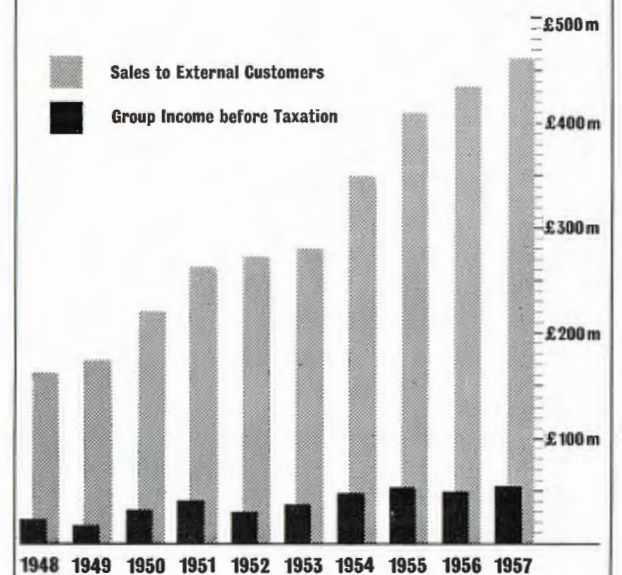
J. T. Bruhn acquired the agency for Scandinavia, and after many difficulties built up a considerable business selling 'Lightning' fasteners for snow-boots in Sweden and Finland. He died in 1929, but his business passed to his son **Hugo**, who is managing director to this day.

The company of **J. T. Bruhn AB** in Stockholm is thus the oldest representative of Lightning Fasteners Ltd. and can also claim that it was responsible for introducing 'Lightning' fasteners into continental Europe.



Mr. H. Bruhn

Profit and Turnover



This diagram shows how turnover and profits of the I.C.I. group have grown side by side over the last ten years. Larger profits have come from larger turnover, the relationship between the two remaining on the average much the same. Turnover has increased as plants and equipment bought over the last ten years have come into production.

Showplace in Georgia

A RECENT issue of *Callaway Beacon*, a house magazine of the Callaway Mills Co. at LaGrange in the State of Georgia, U.S.A., tells of a visit by Sir Alexander Fleck. The Chairman and his party were received with the almost legendary Southern hospitality.

An invitation to see the company's group of textile mills and the township of which it forms an integral part is a compliment to anyone seriously interested in industrial relations. Callaway Mills is one of the industrial show-places of the South.

Fuller Callaway, the founder, was a farm boy who started selling cotton thread from house to house at the age of eight. From a very successful merchandising business he branched out at the age of 29 into textile manufacture. The business prospered, and so did Fuller Callaway.

Apart from giving away much of his personal fortune he eventually arranged for most of the mill profits to be used for the benefit of the community in LaGrange. Callaway Community Foundation now owns the operating company, Callaway Mills Co., and applies the profits to local religious, charitable and educational work. Churches, schools, libraries and community centres have been built and a strong community sense has been developed. Callaway Mills remains a strictly commercial enterprise, seeking (in the words of its president, Mr. Arthur B. Edge, Jr.) "as big a profit as it can make." But the profit goes to one stockholder, Callaway Community Foundation.

Communications

NOT long ago an I.C.I. panel which is studying the use of models in



plant construction wanted to hear the views of an American expert. He wasn't able to visit Britain at the time, so he sent a tape-recorded talk, remarking at the beginning: "You will find this form of communication has a considerable advantage for you; when you get tired of listening to me, just shut me off."

At a recent conference in Geneva the delegates wore headsets and miniature transistor radio receivers. By twiddling a knob they could tune in to any one of the simultaneous translations being broadcast. What is more important, they could leave the hall, even wander round the town, and still listen to the speeches—that is, if they wanted to.

Research Controller Retires

MR. R. M. Winter, who has recently retired after 11 years as

Research Controller, came to the job well equipped. As the first Research Manager of General Chemicals Division, from 1931 to 1936, he had to organise and weld together the research establishments then existing at Widnes, Runcorn, Birmingham and Billingham South and infuse system, order and a common purpose into



Mr. Winter

NEWS IN BRIEF

Fuchs said yes from Antarctic. Sir Vivian Fuchs, leader of the Commonwealth Antarctic Expedition, is to talk to members of Central Council next November about his journey across Antarctica. His agreement was obtained while he was still at Scott Base and waiting to leave for New Zealand.

Salt Records Smashed. Salt production records at I.C.I.A.N.Z.'s Dry Creek Works (South Australia) were shattered in April when 8038 tons were stacked in one day—last year's best was 5984 tons.

Serving Uranium Mines. Canada's newest sulphuric acid plant went into production recently. Constructed by C.I.L. at a cost of \$3,000,000, it is providing acid for the uranium mines of Ontario. The new plant has a capacity of more than 300 tons a day.

Safe Drivers. 66 Wilton transport employees received safe driving awards at Wilton Transport Department's recent dinner and dance. Wilton drivers have now travelled more than 10 million miles without being held directly responsible for causing any serious personal injury.

900 Years. A crowd of 1500 Africans watched a presentation of long service awards at Modderfontein to 41 African employees—nine of them with 30 years' service. Between them they have over 900 years' service with A.E. & C.I.

Another New Plant. A new plant being built at Billingham and to be operated by Heavy Organic Chemicals Division will extend I.C.I.'s output of octylphenol and alkylated phenols, which are used as raw materials in the manufacture of lubricating oil additives, detergents, paint resins and rubber chemicals.

Hare starts Fire. A hare with its fur ablaze was responsible for a fire which endangered an I.C.I.A.N.Z. factory at Ballarat in Victoria. The hare ran from blazing grass on a racecourse into a pad-

dock behind the factory. The fire spread across 150 acres, threatening several parts of the factory before it was got under control.

Synthonia came Second. In the Darlington Musical Festival, Synthonia Male Voice Choir lost by two points when they competed for the *Northern Echo* Cup in the class for choirs of up to 40 voices.

Tenth I.C.I.A.N.Z. Council. I.C.I.A.N.Z.'s Tenth Central Council meeting was held in Melbourne in April. Eleven factories were represented, each by two employees and two management members.

Blood Donor Target. The Billingham factories have set a target of 1500 pints of blood for the blood donor sessions now in progress. The demand for blood through the National Blood Transfusion service in the five Northern Counties is estimated at 65,000 bottles for 1958, or 80 times the amount used in 1939.

German Tour. Four of the five-man team of senior executives from the chemical industry who made a two-week tour of German industry organised by the Industrial Welfare Society were drawn from I.C.I. Purpose of the tour was to study the human and social implications of technological change.

Back to School. Nineteen Ayrshire science teachers gave up three days of their Easter holiday to attend a course of lectures and visits in Ardeer Factory and Research Department. The course was planned to strengthen the bond between industry and schools.

Bowhouse to Close. The Ministry of Supply factory at Bowhouse operated by Nobel Division is to be closed down at the end of the month. The work is being transferred to the Royal Ordnance Factory at Bishopston. As many as possible of the 144 staff and workers will be transferred within the Company.

these very different institutions. It was a job he did with singular success: Research in General Chemicals Division today owes much to the foundations he laid in the thirties.

Mr. Winter was born in Scotland but spent most of his early life in New Zealand. He began his studies in chemistry there and continued them after the first world war as an 1851 exhibitor at Imperial College, London, having received severe wounds in France as a member of the New Zealand Expeditionary Force.

He joined I.C.I. in 1928 after working as a research chemist at Rothamsted Agricultural Station and the War Office Research Department. He was put in charge of research for the "South Site," now Cassel Works, at Billingham and moved over to Liverpool as research manager when General Chemicals Division was formed. In 1936 he moved to Head Office as chief assistant to Dr. Slade and in 1947 became Research Controller.

* * *

The clarity of mind and logical force, exercised with tact and understanding, which had stood him in such good stead in General Chemicals Division were now applied in a wider sphere and formed an essential element in the building up of the whole research organisation. In the many I.C.I. research departments he became a respected and popular figure.

Although a chemist by training, mathematics was his first love, and

he still solaces himself in less active moments with mathematical thinking about the theory of numbers—he still hopes to prove Fermat's famous last theorem.

He has many other interests outside his work, including gardening—particularly scientific gardening—walking and caravanning.

The Amazing Contraption

MR. P. C. Allen's article last month on the charms of railway travel has revived a 15-year-old memory for Mr. J. F. Struthers of I.C.I. Central Instrument Laboratory.

In 1943, temporarily unfit for military service, he was third secretary of the British Legation at Quito, Ecuador. After two years of living and working at 10,000 ft. he and his wife decided to take a holiday on the coast. The place they chose was Manta, which boasted one of the world's most derelict railways, the Manta-Santa Ana.

The narrow gauge rolling stock had been reduced over the years to a single railcar, which Mr. Struthers calls "an amazing contraption." An ancient Chevrolet engine had been built into a lorry chassis; on top of that was a wooden body containing two bench seats and a "boot" for goods and extra passengers.

As the railcar bumped and swayed along, Mr. and Mrs. Struthers in the favoured front seat sat in a shower of water leaking from two oil drums on the roof which were intended to

replenish the radiator. There was little, if any, signalling system on the track, and a large number of unscheduled stops were made—the interested party merely stepping out of the jungle on to the line and holding up his hand. Bananas and a cockerel tied up in a panama hat were among the freight.

By the time the railcar creaked to a halt at Manta the Struthers were battered and waterlogged. But they retain affectionate memories of the Manta-Santa Ana Railway.

28 Years of 'Alfloc'

IN 1930 a young man named Stanley Stevens, the underpaid chief chemist of a group of Nottinghamshire collieries, heard that an American was touring the country with a water treatment process that would eliminate silica scale in boiler tubes.



Mr. Stevens

This treatment was just what was wanted at the collieries. When the American, Ralph Beal, called on Stevens the two were mutually impressed. The upshot was that Stevens joined Beal's water treatment service, which was an offshoot of the Northern Aluminium Co. and the American National Aluminate Corporation.

The service, based on the flocculating properties of sodium aluminate, was called 'Alfloc.' Stanley Stevens worked as its representative in the Midlands, then in London. Eventually he took over from Beal as manager. When he did so there were only ten customers and about as many staff, including typists.

* * *

Today the Alfloc Water Treatment Service, part of Alkali Division, has thousands of customers at home and in 40 countries abroad, looked after by more than 100 water treatment experts. How 'Alfloc' became a partly owned I.C.I. subsidiary, then a wholly owned subsidiary, then a department of Alkali Division, is a long story. Mr. Stevens, who has just retired as general manager, has been at the helm



The amazing contraption—see story above

all the time and can look back on some solid achievements. The water treatment now offered is a good deal more sophisticated than when Ralph Beal first called at the Nottinghamshire colliery, for new problems in steel-works, railways, textile mills, shipping lines, waterworks and atomic energy stations have called for new measures. But the before-and-after service that goes with it is as thorough now as when there were only ten customers.

Research Problem

AN unusual problem faced Mr. Peter Temple of I.C.I.A.N.Z. Central Research Laboratories.

He wanted to insert 150 ft. of polythene pipe into 150 ft. of heavy-gauge rubber hose. How was it to be done?

He tried laying the hose out flat and pushing the piping into it. It didn't



work. He tried with weights, with string and with compressed air, but his best effort forced the piping only 30 ft. down the hose before the friction became too great.

If the hose could be held upright, he thought, and the polythene pipe weighted, it would be easy. But how does one persuade 150 ft. of rubber hose to stand upright?

It's quite simple, really. All you need is a 19-storey building. Mr. Temple had one. He loaded his coils of hose and pipe into a car and drove to I.C.I. House, Melbourne. There he hung the hose out of the window, inserted the pipe—and it worked!

Hope for Rheumatism Sufferers?

RHEUMATISM, despite intensive research, remains one of man's most mysterious diseases. Millions suffer from it, and the field of medicine is strewn with the wrecks of remedies

PEOPLE

Four Alkali Division trade apprentices, **David Lambert**, **Michael Regan**, **Geoffrey Buchan** (the first winner of the Inman Youth Cup) and **Alan Sandbach**, have been promoted to student apprenticeships and are now working for their Higher National Certificate.

Mrs. Hugh Laurie, wife of the Wilton golf professional, became the first lady to hole in one on the Wilton golf course. The first two players to hole in one were both 'Terylene' Works employees—**Mr. B. Parkinson** and **Mr. P. Simpson**.

Mr. Phil Thomas, an instrument foreman in the Wilton Works power plant and assistant secretary of Synthonia Boxing Section, was selected as one of the judges for the A.B.A. national finals at Wembley.

Four Metals Division employees who recently completed 50 years' service have chosen a holiday paid for by the Company as their 50-year award. They are **Mr. C. S. Hale** and **Mr. P. Deadman**, who both plan a coach tour of Scotland, **Mr. A. E. Darby**, who has chosen a holiday at Bournemouth, and **Mr. W. H. Hitchcott**, who spent a week in London last month.

Miss M. Torley of Maryhill Factory (Nobel Division) won two first prizes for French cakes and shortbread in a recent food exhibition held at the Kelvin Hall, Glasgow.

Metals Division's medical officer, **Dr. N. G. Marr**, retired in April after 20 years' service. He is a visiting lecturer of Birmingham University and a corps surgeon of the St. John Ambulance Brigade. Before joining I.C.I. he was a ship's surgeon with the Canadian Pacific Co.

Paul Hodgson, an apprentice fitter at Billingham Division's Heysham factory, was chosen as one of the Queen's Scouts for a parade before the Queen and the Duke of Edinburgh at the National Scout Service at Windsor.

thought at various times to be panaceas for the condition.

Doctors and research workers are therefore cautious about making claims for new drugs which show promise. But it does seem that there is a future in the treatment of rheumatism for a drug called chloroquine, made by Dyestuffs Division at Grangemouth and marketed by Pharmaceuticals Division as 'Avlochlor.'

Chloroquine is actually one of the new antimalarial drugs, and it came to be considered for the treatment of rheumatism as the result of a fortunate accident. Not many years ago a

patient was being treated with mepacrine, the first synthetic substitute for quinine to be widely used in the treatment of malaria. Mepacrine was known to benefit a certain skin condition that the patient was suffering from, but he also happened to be suffering from a type of rheumatism. The rheumatism improved at the same time as the skin condition, and so there started an investigation of the newer antimalarial drugs in the treatment of rheumatism.

* * *

Chloroquine was given clinical trials in Britain, Canada, the U.S.A. and Rumania, and doctors concerned with the trials are enthusiastic about it. A Canadian rheumatologist, for instance, has reported a definite improvement in 70% of his patients after treatment with chloroquine. Some showed an improvement in two months, but at least twelve months' treatment is considered necessary for maximum benefit. The drug is of little value against osteoarthritis.

Treatment with chloroquine is given only under medical supervision. Expert diagnosis is needed to differentiate between the different forms of arthritis, and in a few people the drug may produce unpleasant side effects.

Stowmarket Boy's Trip

AMONG the British contingent at the Boys Brigade international camp at Kingston, Jamaica, in April was **Alan Mayhew**, a 17-year-old clerk from the Stowmarket factory of Paints Division.

With 49 other boys and 27 officers he flew to Jamaica from Prestwick via New York. After a week in camp, all the boys dispersed to spend the rest of their stay in Jamaican homes.

Alan Mayhew has been a member of the Boys Brigade since he was 12 and holds the Queen's Badge. This is the Brigade's highest award and is given to boys of outstanding merit.



Mr. Mayhew

Castner Medal

To celebrate the jubilee of General Chemicals Division's Castner-Kellner factory at Runcorn in 1947 a memorial lecture and medal to Hamilton Young Castner was established. This year's medallist is **Dr. Ronald Holroyd**, one of I.C.I.'s deputy chairmen, and his election coincides with the centenary of Castner's birth—in Brooklyn, New York, in September 1858.

The medal, in gold, was struck by the Royal Mint, and copies in bronze have been sent to the various factories where processes invented by Castner have been carried out.

So far five gold medals have been awarded by the Society of Chemical Industry, which administers the trust. Three have gone to British scientists: the first, in the jubilee year, to Sir Alexander Fleck; in 1956 to Sir Christopher Hinton, one-time chief engineer at Alkali Division and now chairman of the Central Electricity Authority, and the centenary year medal to Dr.

Holroyd. The two foreign medallists are the Norwegian chemist Dr. Christian Aall and Mr. R. C. Swain of the American Cyanamid Co.

Dr. Holroyd received his medal at a special meeting at Newcastle at the end of April. The subject of his lecture was the development of the petroleum chemical industry in Great Britain.

NEW APPOINTMENTS

Some recent appointments in I.C.I. are: **Alfloc Water Treatment Service**: Mr. A. J. Mills (General Manager). **Billingham Division**: Mr. J. W. R. Rayner (Development Manager). **Canadian Industries Ltd.**: Mr. R. B. Winsor (a director), Mr. B. J. Moriarty (General Manager, Textile Fibres Division). **Head Office**: Mr. M. A. E. Hodgson (Manager, Technical Department). **Leathercloth Division**: Mr. H. A. D. Perry (Assistant Managing Director, in addition to appointment as a Paints Division director).

OBITUARY

Sir Lennon Raws

We regret to announce the death on 19th April of Sir Lennon Raws, first Managing

Director of I.C.I.A.N.Z. and Chairman from 1934 to 1947. He had held directorships of many prominent Australian companies at various times in his career, and was Deputy Chancellor of the University of Melbourne for 11 years.

Mr. R. C. Todhunter writes:

I first had the privilege of meeting Sir Lennon Raws in 1928, soon after the formation of I.C.I.A.N.Z., when I spent three years in the Melbourne office. His even temperament made him a delightful man to work for, although he was a stickler for detail and expected others to work as hard as he did himself. The only thing that would rouse him to anger was any suspicion of sharp practice.

Integrity and austerity were the key features of his life, but behind that austere, and to many people frightening, countenance there were a keen sense of humour and a delightful, if pungent, wit.

It is in a great measure due to his foresight, drive and wisdom that I.C.I.A.N.Z. has been able to develop from a modest start in 1928 into one of the leading industrial companies in Australia. At the same time he established that long and happy relationship which has always existed between I.C.I.A.N.Z. and I.C.I.

Outside the Company he was a great figure in Australian life, and to be invited to join him for lunch at his favourite table at the Australian Club always meant meeting some of the leading personalities of the Commonwealth.

HEAVY ORGANICS QUIZ (continued from page 185)

SAUNDERS: Yes. When the war came, coal as a raw material was replaced by creosote oil, because the plant would have become choked up with coal if it had had to shut down suddenly for an air raid. The plant, with additions, produced a very high octane number aviation fuel which gave our planes additional power and speed.

EDITOR: How did you develop after the war?

SAUNDERS: Manufacture of petrol from creosote oil continued after the war—coal has never been used again—but by this time we had become quite knowledgeable on techniques dealing with oils of various sorts and with hydrocarbon gases from these oils. As a result of research work and from other information, including a good deal from German sources, processes which used some of our hydrocarbon gases as well as oils which came from oil refineries were developed and put into operation. These processes, called carbonylation, were carried out in plants built at Billingham. They used carbon monoxide from the Billingham ammonia plant to convert the gases and oils into higher alcohols used largely in the plastics industry. At the same time ethylene was wanted in large quantities to make polythene for Alkali Division, who had charge of it then, and so oil crackers were installed at Wilton for this purpose and to supply more gases for use on the higher alcohols and other plants at Billingham.

EDITOR: Did the same team who developed coal hydrogenation do the work on making these new organic chemicals, such as the higher alcohols and ethylene?

SAUNDERS: Broadly speaking I suppose I must say yes to this, but in an organisation like Billingham there are always changes, so all the teams slowly change with the passing of the years. A few years after the end of the war, Kenneth Gordon left and Dr. Holroyd, who is now a Deputy Chairman of I.C.I., one who worked with him for many years, took over. Just as Kenneth Gordon was largely responsible for the early work, so Dr. Holroyd was responsible for the development of the newer aspects and for the great and rapid broadening of the field to what it is today.

EDITOR: Can you give a sketch of where your market lies?

SAUNDERS: Quite a bit of our output goes to other Divisions, and the rest goes to other manufacturers at home and abroad. Most of our products are used in the plastics, fibres, paints and oil industries, but we are increasing the number of chemicals we make and their uses.

EDITOR: Are you the leading people in Britain in your field?

SAUNDERS: Yes; but there are many competitors in this country and abroad, particularly among the oil and related industries.

EDITOR: One last question. As chairman of a new Division, have you what might be called any special philosophy?

SAUNDERS: Yes, I think I have, although I am rather diffident about saying these things in the *Magazine*. I believe that responsibility, fitting to the job, should be given fairly and squarely to everybody and that directors should direct and managers should manage. Our organisation is based on this.

ELECTRONIC COMPUTER

By N. Levy (Billingham Division)

Illustrated by H. J. Eric Smith

In the last few years electronic computers—popularly but erroneously known as electronic brains—have become valuable tools of the chemical industry, saving time, money and materials down the line. Complicated in themselves, the principles behind their operation are none the less essentially simple.

ELECTRONIC computers have become popular news during the past few years, and nearly human powers have been ascribed to these mathematical robots. One such machine has been working in the Billingham Research Department for over a year, carrying out vast quantities of arithmetic on scientific, engineering and design problems.

Many of these "sums" could not have been tackled previously because of the sheer burden of figuring. For others, approximate methods and answers had to suffice. To have dealt fully and exactly with all these calculations would have taken a small army of skilled staff operating at the limited speed of electric desk calculators, that is, a few hundred elementary steps (addition, subtraction, multiplication, division) per hour. Since it started work, the Billingham "electronic brain" has completed several hundred million such steps, equivalent to hundreds of desk calculators.

By current standards, our machine, an Elliott 402, is modest in speed and capacity; it is "only" 100–500 times as fast as a human being with a conventional desk calculator. Like all machines of its kind, it works by changing figures and instructions into sequences of electrical pulses. It stores the figures and instructions with the aid of a memory device; transfers them automatically and in proper order to circuits which carry out the arithmetic, and finally actuates a mechanism to print results. The title "electronic brain" is really an exaggeration. The machine merely does as it is told. All the intelligence, judgment and knowledge required for solving a problem must first be built into the set of instructions fed to the machine. This set of instructions, called the programme, contains *all* the brainwork. The machine will send out nonsense or

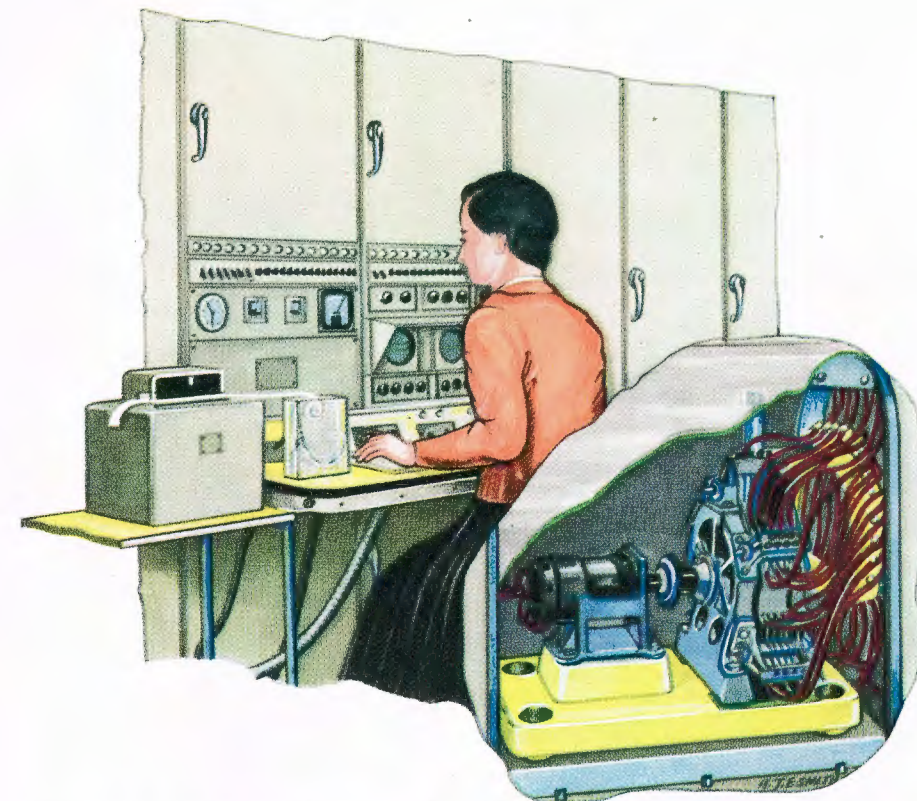
come to a halt if the programme is inadequate or faulty.

With the 402, instructions and numbers are first coded on to paper tape as rows of holes by means of a keyboard punch. The tape is then fed mechanically into the machine through a fast photo-electric reader which senses the holes and signals corresponding pulses. These are eventually picked up on the memory, a rapidly revolving drum round which numbers, instructions, intermediate working and final answers are stored in the form of tiny magnetic spots.

There is room on the drum for nearly 4000 pieces of information. A single addition or subtraction takes 1/5000th of a second, multiplication or division 1/300th, and picking up from the drum about 1/170th. The average internal speed thus depends on how often the memory is consulted. In much the same way a human being is slowed down in the course of a calculation by time spent in writing down, picking up and inspecting intermediate figures.

If this were the only restriction, the 402 would carry out at least half a million elementary steps an hour and work some thousands of times as fast as a desk calculator. However, paper tape input and output being relatively slow, the overall speed is often less than this. When the required answer consists of large tables of figures, the machine keeps up with 100 desk calculators; when the mathematics are intricate and the answer is a few figures, the ratio may be as high as 500.

At these comforting speeds, nasty and intractable problems have become fairly simple. Most calculations, including very abstruse ones, can be broken down into a succession of elementary steps. The number of such steps may be very large indeed, but this hardly matters when hundreds or thousands pour through the machine each



The computer as used at Billingham Division. Inset: A view of the memory drum.

second. For example, the calculation of stresses in pressure vessel flanges may take a mathematically minded engineer several hours per flange; the machine takes a minute. By completing 750 examples in ten hours it has digested a year's work in little over a day! More sophisticated problems, such as the calculation of flows and resistances in supply networks or fixing the optimum size and operating conditions for chemical reactors, may take 10–30 minutes on the machine, against days or weeks on the desk. To calculate 200 different designs of a reaction tower took five hours instead of three months.

The outstanding gain is not the lower cost of calculation, but the power to make better decisions much more quickly, saving time, money and materials further down the line. Occasionally problems of a more theoretical nature may take from one to four hours on the machine for a single run through. Here the gain is the ability to undertake the problem at all.

About half the time of the 402 is devoted to repetitive research and design matters, the remainder to better understanding of research results, full-scale operation, design factors and fundamental background. Examples of the former are 8000–9000 complex calculations of analyses per year, many hundreds of pressure stress computations, derivation of crystal structures from X-ray measurements, prediction of chemical reaction rates, and designing plant for which the laws, though known, are intricate. Problems

of the other sort include extracting trends or mathematical laws from research or operating data, improving our theoretical models of real chemical and physical situations, and exploring on paper, rather than by costly experiment, extreme variations of design or operating procedure.

In this kind of work the machine is often made to select its own path through the maze by giving it conditional instructions, such as "Repeat the calculation with certain factors changed by given amounts, compare the answer with the previous answer, and continue repeating until the answer no longer improves." The final best answer may be an output, a cost, a product quality, a time to act, or the goodness of fit to a working formula. One fascinating case has been the complete mechanisation of decisions on stock control for a multi-product plant against patterns of manufacture and demand.

What has been the impact of the computer in this short while? First, scarce technical staff are being released from the drudgery of prolonged computation and are getting time to think. Indeed, the rate at which answers come out of the machine generates faster and deeper thought. Second, results are much more comprehensive and arrive in good time for any necessary action. Third—but perhaps it is too soon to draw up a catalogue. Certainly the 402 has begun to stimulate fresh thinking about many activities at Billingham, and that is potentially its most valuable outcome.

Central Council

New arrangements for profit-sharing, an announcement on the Staff Grade Scheme, a report on Wilton's try-out of payment of wages through a bank—these were the highlights of last month's Central Council meeting at Scarborough.

CENTRAL Council meeting at Scarborough was clearly dominated by the importance of Sir Ewart Smith's pronouncement on the changes in the Profit Sharing Scheme. The order of proceedings on the agenda was revised by the chairman—Mr. S. P. Chambers—in order to give Sir Ewart an opportunity to make his statement in the morning so that councillors should have a little leisure in which to consider its implications and frame questions. In the event, however, no questions were forthcoming.

The reason for the changes in the scheme can be stated quite briefly. It is that in 1958 the money available for distribution as dividends will have to be divided over a larger nominal capital as a result of the scrip issue—in fact £216 million instead of £144 million. Therefore (assuming profits remain much the same) the rate of dividend will have to be reduced; and if the rules of the Profit Sharing Scheme were to remain unchanged, the profit-sharing bonus for 1958 (payable in 1959) would be reduced too.

The answer arrived at is a simple one. It is that in future the total sum available for bonus will no longer be related to the rate of dividend declared, but to the total amount (before tax) paid by the Company to all its stockholders. Under the *present* rules, the bonus is calculated at the rate of 1% of remuneration for every 1% by which the dividend on the Ordinary shares exceeds 5%. Under the *new* rules, the total sum available for bonus will simply be a sum equal to 22% of the total amount, before tax, paid by the Company to its stockholders. Why the figure of 22%? The answer is that it is this percentage which, on last year's figures, gives the same total of profit-sharing bonus as will be distributed this year. The total sum available for bonus will then be divided by the total remuneration of all those eligible under the scheme, and will be expressed as so much per £ of remuneration, rounded off to the nearest penny.

The next point that Sir Ewart explained was the change in the method of calculating what he described as "a reasonable and proper safeguard to the stockholders." Under the *present* rules, the bonus to employees goes down as the dividend falls and is reduced to nothing if

the Ordinary dividend goes down to 5%. Under the *new* rules, there is no connection between the rate of dividend and the bonus, *except for the proviso* that no bonus will be paid should the Ordinary dividend fall below 5%. In other words, a dividend of 5% or above is the necessary green light for profit-sharing bonus to be paid at all.

Sir Ewart had one other observation worth recording—and a point of some interest though of no immediate practical implication. He drew attention to the fact that at present about 7% of the profits of the Company come from its subsidiary and associated companies, many of them overseas; and observed that the profits of these companies are largely independent of the efforts of the employees covered by the I.C.I. employees' Profit Sharing Scheme. It would clearly be wrong if I.C.I. employees were to draw a substantial profit-sharing bonus in respect of the efforts of others. If therefore in the future, said Sir Ewart, the proportion of the Company's revenue which comes from its subsidiary and associated companies should alter substantially, it would then be only fair and proper to adjust the scheme to take account of such changes.

One last point. Sir Ewart mentioned that the average bonus now being drawn by I.C.I. employees was just under £60 a year; and the average dividend being drawn by an I.C.I. shareholder was, curiously enough, very nearly the same figure—just over £70.

This statement, listened to with close attention,

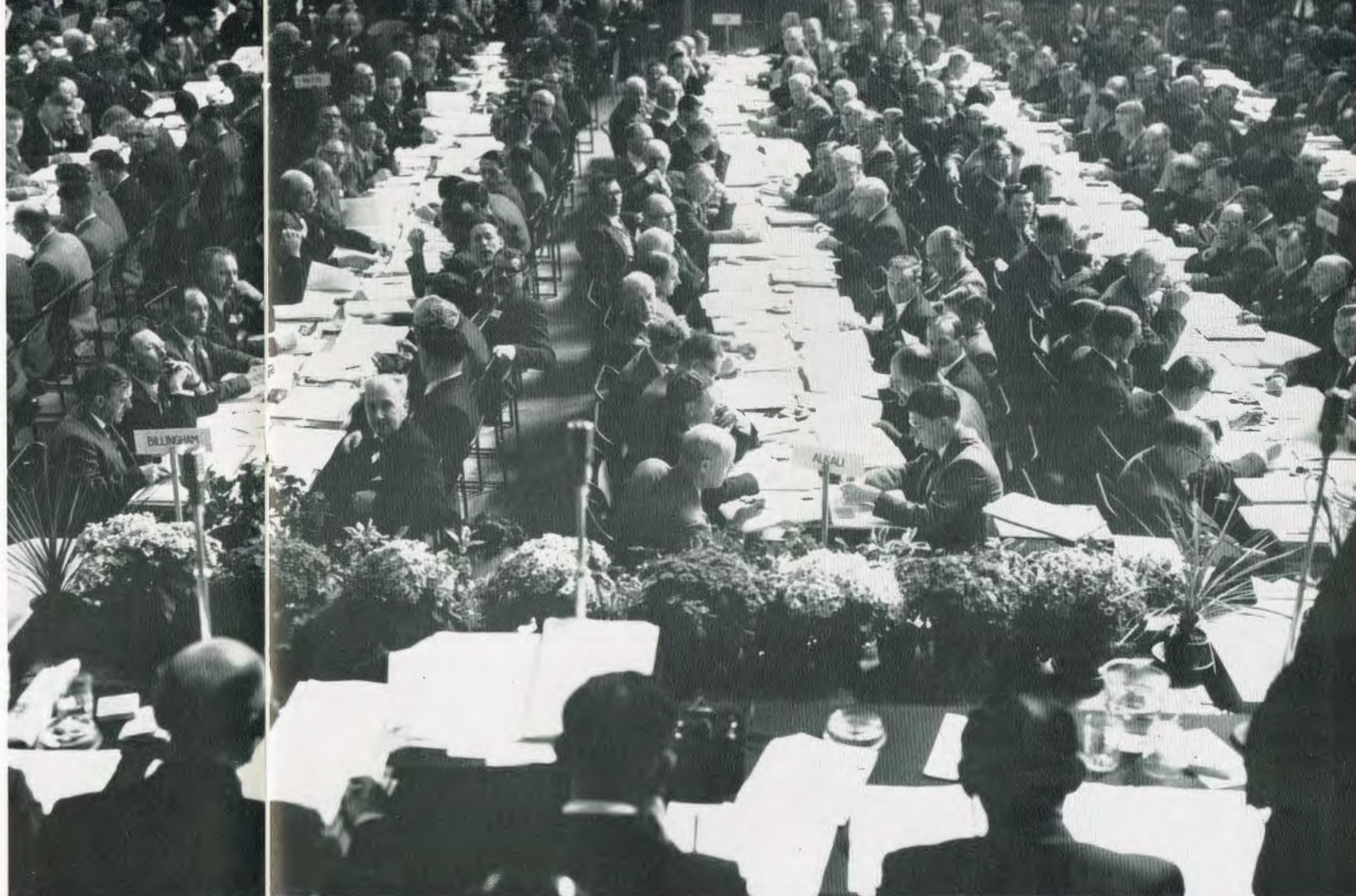
followed the address of Mr. S. P. Chambers, the chairman. Mr. Chambers began by saying how sorry they all were that Sir Alexander Fleck was unable to be present. What was believed to be a minor internal disorder required further medical examination, and for this Sir Alexander had to remain in London.

Mr. Chambers then went on to highlight the main points of the Company's trading in 1957. Group sales—in other words sales of I.C.I. and its subsidiaries—had reached a new record level of £463 million, an increase of just over 6% above the previous year. Net income of the Company was just over £22 million compared with £19½ million in 1956. Mr. Chambers stressed that this increase in profits, like the increase in sales turnover, was largely attributable to the heavy capital expenditure of recent years. Just over £11 million was being set aside as reserves for further

investment within the Company, and the remaining £11 million was being allocated for the payment of dividends.

Mr. Chambers went on to speak about India, and councillors warmly applauded the welcome which was extended to the chairman of I.C.I. India, Mr. Jagaroal Lall, who was present. After outlining India's chemical expansion—a new polythene plant, a dyestuffs plant and a new explosives plant—Mr. Chambers posed the question: in assisting the industrial development of India in this way are we not perhaps doing something which will hurt our production and employment at home? The answer was a firm no.

"Indeed," said Mr. Chambers, "the question is almost academic, because if we did not go ahead in this way there are others, Germans, Americans, Russians, who are prepared to do so. But that is not all. The standards of living of India's 400 millions are still deplorably low.



The forty-fifth Central Council in session in the Olympia Hall, Scarborough, on 2nd May



Time off for coffee and a quiet smoke for Sir Ewart Smith, one of I.C.I.'s deputy chairmen, seen above with Mr. H. Guest (Trafford Park) and Mr. S. Jones (Blackley)



Against a background of the Scarborough seafront in sunshine are Billingham councillors N. E. Huckle, G. Parkin, W. Horton, S. R. Breeze and J. Leonard. Below: Three observers from Kynoch Works: W. Lister, A. J. Mosley and I. Davies.



Everything we do to help improve those standards makes India a better customer for British goods. A narrow parochial view about a particular product, though understandable, can never be the foundation of industrial policy either for Britain or for I.C.I."

Staff grade problems

Of the other items on the agenda, two stood out in interest and importance and both were reports. The first was the Company's reply to a previous resolution that the service qualification for promotion to Staff Grade should be reduced from three years' service to eighteen months. On this matter, Mr. R. A. Banks, I.C.I. Personnel Director, made what was clearly an important statement on Company policy.

He began by showing a sympathetic understanding of the problem of Staff Grade sickness. This problem can be put quite simply—it is that the sickness figures for Staff Grade are just double those for non-Staff Grade. The Company fully expected higher Staff Grade sickness figures for two reasons—firstly because the average age of people on Staff Grade was higher; and secondly because people who were ill did not report back for work again until, as was right and proper, they were fit to do a day's work. Even allowing for these factors, however, Staff Grade sickness was at least 50% up on non-Staff Grade sickness. The Board, said Mr. Banks, was distinctly uneasy about this trend. Although no particular magic was to be attached to the qualifying period of three years, nevertheless the problem of Staff Grade sickness must be solved before changes were made. The Board recognised that this was primarily a management problem, but at the same time it required the co-operation of all concerned.

Wages through a bank

The other report to Council was of a very different nature. Mr. Goodsell, a Wilton works councillor, related the progress which Wilton Site was making with a pilot scheme to try out payment of wages direct to a bank.

In the eleven months since the resolution was first moved, a number of difficulties had already been cleared up. Firstly it has been established that payment of wages through a bank was legal *provided* this was done as a result of a voluntary application and provided the applicant could contract out of the scheme. Secondly the co-operation of the banks in a pilot scheme had been sought and received; in fact the banks had agreed that during the first six months of the scheme no charge would be made by the banks for their services. Several people at Wilton had opted for a try-out of the pilot scheme and the first payment of wages through a bank was taking place before the end of May.

"An imaginative and important proposal" was how Mr. McEntee, chairman of Wilton Council, described

the scheme; and with this everyone would surely agree.

Perhaps the most interesting discussion was that which took place on the motion that Central Council Standing Orders be amended to allow motions obtaining a two-thirds majority to go forward automatically to the Board. At present, a minority of ten votes against is sufficient to ensure that a motion is referred back to Divisions for further consideration.

This proposal, described by its advocates as democratic, was criticised by Mr. Stoddart of Paints Division as "a direct blow to the smaller Divisions." "If you look at the voting power of the smaller Divisions," he said, "you will see what I mean."

Other councillors suggested a more modest change to Standing Orders and proposed an amendment that 10% of votes cast instead of ten votes should constitute the decisive voting pull of the blocking minority. This amendment was put to Council and defeated and likewise the motion was put and defeated. So Standing Orders remain the same, which is perhaps just as well. They have worked smoothly in the past; and as Mr. Hampshire, chairman of General Chemicals Division, pointed out, if a two-thirds majority had been required there would have been no I.C.I. tie, since the original motion proposing the tie would, under the suggested change, have been lost.

Business in Brief

Other items of interest were the Company's decision that the qualification period for a silver watch should remain twenty years; the statement that the Company would "put in machinery" to ensure that a man should be considered for promotion to Staff Grade "as soon as administratively possible" after completion of three years' service; the announcements by Mr. Grint, Chief Labour Officer, that there would be no change in canteen prices for the remainder of this year and that the Divisions were examining plans for increasing training facilities for young people; and the resolution that the Company should be asked to provide facilities for the purchase of Premium Bonds on the same basis as the facilities now provided for the purchase of national savings certificates—namely as a deduction from wages.

Finally mention must be made of the lucid explanation of the Company's accounts by Mr. P. T. Menzies.

A Useful Meeting

All in all it was a useful meeting—useful not so much because of anything new that may have come up from the floor of the house as because Council showed its value as an instrument whereby Company decisions could be conveyed to people from every works through the spoken word, through personal explanation, and through question and answer where need be. How much better than cold impersonal print!

R.M.K.



A place in the sun during the coffee break for management representatives R. Sagar and D. Stewart (Dyestuffs Division), F. H. Corbett (Metals) and J. Porter (Dyestuffs)



A group of Fibres Division members: Dr. E. R. H. Davies, Dr. A. Marks, and Messrs. L. J. Parham, B. L. Johnson and D. Jackson. Below: Dyestuffs representatives W. H. C. Beard, P. G. Hurst and E. Sailes (all from Ellesmere Port) deep in discussion with W. C. Sharp (Regent Works).



The First Escape of the War

By Rupert Barry

Photographs by P. R. Reid

The story of what is believed to be the first escape from a German prison camp in the last war is here told for the first time. Dressed as a family party—mother, father and son—three officers escaped for six days from Oflag VII C/H near the German-Austrian border.

EARLY in September 1940 six of us, very early one morning—in fact as dawn was breaking—were to escape through a tunnel we had made from Oflag VII C/H in Germany. The exit of this tunnel came up in a lean-to shed in an old woman's back yard. I won't describe the building of the tunnel, as that would take too long, and in any case it is described in some detail in Pat Reid's book, *The Colditz Story*. We started work on the tunnel on 14th July—the anniversary of the storming of the Bastille. The only tools we had were two six inch nails and a stone.

As I have said, there were six of us. We didn't like this number: we considered it too high, especially as the exit from the old woman's shed was in full view of one of the sentries up on a catwalk, and it would have been very difficult to justify the emergence of six young men from her house at 6 o'clock in the morning.

We organised ourselves into two families of three.



The old woman's lean-to shed, in which the escapers' tunnel surfaced

Pat Reid was dressed as mother, I was father, and Peter Allen, who was and looked extremely young, was our son. Dressing mother was a bit of a problem and giving Pat Reid a feminine figure was another.

At this stage in the war we were not equipped for escapades of this variety—we had no money, no papers, and very, very little food. Nothing had been organised, and our families still did not know if we were alive or dead. What food we had we had stolen from the Germans. The problem of carrying this and the problem of Pat's female figure was solved in one. The food was placed in two inside battledress blouse pockets, tied together with a piece of string and placed round Pat's neck, the two full pockets resting more or less in the right position on his chest.

The tunnel was little more than a rat hole, and in negotiating it Pat found some difficulty. He—or should I say she?—emerged at the other end covered from head to foot in earth, with one "whatnot" up by his ear and the other resting on his stomach—altogether a sorry sight! However, with one or two nervous giggles (we were capable of nothing more, as the three of us had severe butterflies in the tummy and were trying our utmost not to be sick with fear) we quickly restored Pat to her full glory and pushed her out into the street. There was then nothing else for it, she had to go—so off she waddled (I may say she was wearing boots!).

The sentry did not seem unduly perturbed and there was no shot. After a few seconds Peter and I left—not quite hand in hand, as he was too old for that. One could almost feel the sentry's eyes boring into one's back, one expected a shot at any minute, and one had to fight down the overwhelming desire to run. It was with great relief that we rounded the bend into



A view of Oflag VII C/H at Laufen, near the German-Austrian border

the village main street and out of sight of the sentry.

The villagers were up and there were many women in the street. They took no notice of Peter Allen and myself but found Pat Reid fascinating, and as she passed them, Peter and I, who were some 25 yards behind, could see them turn round to stare. It was somewhat of a hair raising experience. When we arrived in a wood on the other side of the River Salzach, where Pat Reid was once again to change sex, our hands were, to say the least, a bit unsteady, and I could light a cigarette only with the greatest difficulty.

In this wood a transformation took place and we emerged as three German Luftwaffe pilots on a hiking holiday in Austria, all hot from the Battle of Britain. What we had to say about the bombing of London was quite remarkable! But who was to know better than Peter Allen, who spoke German as a native. He would have to "spill the beans."

Pat and I at this stage had just about mastered *Ja* and *Nein*. We intended to add to any conversation with these two words according to how we thought the conversation was going—punctuated of course with the odd grunt. Anyway, we were now free, and for the time being we were going to enjoy walking about—or at least we thought we were going to. The

vulgar question of speaking German could be shelved until the occasion arose. To me the language sounded like the bath water running out.

We will leave the story here for the time being and go back a bit. Oflag VII C/H from which we had escaped was at Laufen, almost on the German-Austrian border, and we were proposing to walk to the Yugoslav border, crossing it to the east of Spittal. This meant crossing the Austrian Alps from the north to the south—in general they run east and west—so it was a question of up and over. We estimated this would take ten days at least, the distance as far as I can remember being about 180 miles. We had organised a system of fixing the German check counts while we had been in the camp and left instructions that these would continue to be fixed for ten days. The Germans would thus not know we had gone and therefore would not be looking for us.

In the meantime the tunnel was to be covered over and not used by anybody else for ten days. This was almost certainly the first escape of the war, and nobody knew what the German reaction would be when they found out. However, from various threats they had made it was quite clear that they were not going to be awfully pleased.

Unbeknown to us at the time was the fact that the other three who were to escape immediately after us had failed to do so, because of the time factor. We knew the old woman appeared in her shed regularly each morning at 6.30 and by the time we had gone there was barely time to cover up, certainly not time to get the others out. They did, however, leave successfully the next morning.

Pat Reid had been an engineer before the war and Peter Allen had only recently left Tonbridge School. I believe he was in Civvy Street for a few months and was then embodied with the rest of the T.A. Neither of them had had much military training.

So much for the background of the three of us standing rather forlorn in this wood, worried by a considerable amount of shooting going on in the vicinity. The first shot was somewhat alarming, but as the firing assumed a regular pattern it was soon obvious to me at any rate that the "squareheads" (for that is what we called them) were engaged in target practice. But Pat and Peter were not entirely convinced and wished to be off out of the area, so without further



delay we girded up our loins and set course for a wooded hill some three miles away.

Peter set the pace and I don't know if he knew what he was doing, but he set off at a speed of approximately 7 to 8 miles an hour. It was quite obvious to me that if we maintained this speed I certainly wasn't going to get very far and I strongly suspected that they weren't either, so we slowed down to a steady tramp of 3 miles per hour, which was more economical. A steady hiking pace was far more natural and would in addition cause little suspicion. Even a farmer would be mildly surprised to see three people moving over his land as if pursued by a pack of wild animals.

None of us was in good condition. We had been living for six months on a starvation diet and during the last few weeks in the prison camp we had in common with the others to pull ourselves upstairs with both hands, as we had lost the strength to walk up in the normal manner.

Our intention had always been to hide up by day and walk at night, so having reached this wooded hill we started to doss down for a sleep in the sun, keeping sentry in turn. Sleep just would not come to any of us, as our brains were working overtime and it was impossible to relax. However, the day was pleasantly warm and it was a real joy just to lie down in the grass.

Laufen was some twelve miles north-west of Salzburg. Our route took us north and east of this town on to the high ground east of the Hallain Golling Valley, up the valley running east out of it and finally turning south to Radstadt and then on south to Spittal. The country was undulating at first but this soon gave way to mountains, and gradually we were forced by geographical conditions off open country into the valleys and finally on to the roads.

Out of sheer exhaustion and not daring to risk not finding another hide before dawn, we usually stopped for the night at about 4 a.m. By this time we were all sweaty and terribly thirsty. We would lie down like three Babes in the Wood, side by side for warmth with our only blanket over the three of us, heads sticking out one end and feet the other, with our teeth keeping up an incessant chatter from the cold. Four o'clock to eight in the morning was the grimmest time of all. I thought it was ghastly and literally shook and ached all over. At dawn we could smoke. I was the only smoker of the three, but as Pat and Peter had saved up their meagre cigarette ration for me (two a day) for some time I was well supplied.

The food situation was, however, quite the reverse; breakfast consisted of one spoonful of dry Quaker Oats mixed with sugar.

Lunch was the same, but if there was water available we added to our meal a cup of Oxo, which we shared. Supper was the same as breakfast. One night we were forced to go to ground suddenly in what turned out to be a small potato patch. We grubbed among the roots and then set off again a few potatoes the richer. Some of them were consumed raw that night, the others we boiled in Oxo next day, and this formed the only hot meal we had in six days.

After three nights we found we were far behind in our schedule and realised that if we continued like this we were going to take much more than ten days to reach the frontier. As we knew the harder part of the journey was still ahead of us, we decided to be bold and to walk by day as well as by night. No trouble was encountered, we saluted all people we saw in the customary manner, followed by "Heil Hitler," and sailed on.

One Sunday afternoon when the Germans were taking the air, having walked clean through the main street of a large village, we looked back and were horrified to see three girls gaining on us fast. We increased speed and looked over our shoulders again to find that they were still gaining. Most of the young men were away at the war, and there was no doubt that they intended to pass the time of day with us. This was the sort of situation we had not bargained for, so on rounding a bend we ran for our lives and before they came into sight again we had put a further hundred yards between us and the girls. They gave up the chase.



The hill on top of which the first day of freedom was spent



The road where the party was ambushed and recaptured

At about midnight a few nights later we were making good progress in the right direction along a road when we heard ahead of us what sounded like a man picking up his bicycle, hurling it to the ground, swearing, and then doing it all again and again. Just as we dived off the road into a field a light suddenly flashed on over the front door of a house and went out again. We thought this odd but dismissed it from our minds. We lay flat in the field waiting for this whatever it was to come along. Sure enough along came a man, picked his bicycle up and hurled it down on to the road with all manner of curses. Still doing this,

he finally disappeared. We looked at each other in amazement, lay where we were for a few minutes and then took a circle back on to the road.

The next night at about 10.30 we came to a village not marked on our map. We continued through it, and as we were emerging at the other end a light suddenly went on and off over the front door of one of the houses. Twenty yards further on the road forked. This wasn't shown on our map either. It was dark, we could not read the signpost, so we pushed Peter up it to have a closer look. Down he came, pointed to the fork we should take, and before we knew what had happened all three of us were flat on the road with a wriggling mass of humanity on top of us.

Having sorted this untidy mess out, the police (for the German police they were) lined us up with our hands above our heads. All this was accomplished with a great deal of shouting.

Peter Allen now had his say, in faultless German and with great indignation. "How dare you treat three German officers like this! We have come here on a walking holiday from France and we are on leave. Put your rifles down at once and explain what you think you are doing!" Somewhat surprised, they tried



The inn into which the escapers were taken for closer inspection after recapture

to question Pat and myself, only to be met with an insolent and stony silence. They were still not really sure of their ground and took us to the village inn, where surrounded by the village children with their eyes popping out of their heads the ugly truth was revealed.

We were then taken to Abtenau civil prison and given a cell each with a bed and three blankets. This to us was comfort itself and we might have been in the Ritz Hotel. We were fast asleep in a matter of seconds. An hour later we were awakened by a lot of *Achtungs* coming down the passage, much stamping of feet and a jingling of keys. My door was thrown open and in sailed a lordly-looking creature who turned out to be the Chief of Police and the first decent German I had met in six months.

We were documented—father's name, mother's name, age, where were we born, etc. The police routine could not be upset and had to be proceeded with to the bitter end. The "chief" was, however, a kindly man. He asked us when we had last eaten, to which we replied: "In May." It was then mid-September. He had a meal produced forthwith and as far as I can remember gave us a bottle of wine. He asked us how we had missed his trap the night before, as he had set two on this road and we had walked into the second and last one.

Looking back now, it seems as if the bicycle man was subjected to the same treatment as we got. When we saw him he was, in his peculiar way, registering his displeasure. In both cases the warning signal was the same. Incidentally, the police showed us our official description. There should have been six of us and we should have been in battledress; we were very



The entrance to Abtenau Prison, in which the escapers were locked up

pleased to see that we were termed "dangerous" in this description.

The next morning we were taken back to Laufen, where we were met by Sergeant Major Herman, a real four-letter man. He had obviously had his tail twisted over us and was going to get his own back. He rushed at us, roaring his head off, punched us, tweaked our ears, spat at us and stuffed his filthy face within a centimetre of each of our noses in turn. Herman was worried, as our means of exit had still not been found and he was being urged on to greater efforts

by that crafty swine the Defence Officer. I have long since forgotten his name, but I heard at a later date that he had lost a son in battle and consider this retribution for the needless misery he caused to hundreds of prisoners.

The other three had been far more sensible than we. They had travelled by goods train and were finally rounded up near Innsbruck. Justice in the German army is a very one-sided affair—one is given no chance to defend oneself, neither is one given a hearing. So without more to-do, the sentence was read out. Pat 28 days, self 26 days, Peter 20 days—all solitary confinement on bread and water, sleeping on boards. Why the difference in punishment, we never knew. One can only assume it depended on the amount of insolence shown when being interrogated!

Shortly after doing time, which was not unduly hard, we were all suddenly ordered to pack and be ready to leave in fifteen minutes. After much speculation as to our future, if any, we presented ourselves at the gate and were marched off to the station.

Travelling all that night



The six escapers who later became the first inmates of Colditz fortress: Capt. Harry Elliott (Irish Guards), the author, Capt. Pat Reid (R.A.S.C.), Capt. Dick Hare (Royal Tank Regiment), Lt. Peter Allen (Cameron Highlanders), Capt. Kenneth Lockwood (The Queen's Regiment)

in the comparative comfort of a third-class carriage (I say this because my previous journey in Germany had been one of fifty in a cattle truck), we arrived about midday at Chemnitz. Here the inevitable hitch occurred and it would seem that there was no onward connection that day. After much talk between our guards and the police we were marched through Chemnitz (one of the German chemical towns) to the town lockup. Here, I regret to say, I started to steal. Under my bed was what the British Army would call Pots Chamber!

Next morning we were lined up in file and marched back to the station down the main street. And in my right hand, being swung smartly in line with the waist belt front and rear in proper military fashion, was Pots Chamber!

After a short train journey we arrived at a small station called Colditz. On top of the only hill for miles around was what looked to be a Walt Disney castle, and into this we were bundled. Pots Chamber became Pots Cooking and did good service for many months. It was in fact the only cooking pot we had.



Colditz fortress floodlit at night to prevent escape

PICTURES FROM OVERSEAS



Japan. Sir Alexander Fleck and the staff of I.C.I. (Japan)'s Tokyo office. During his ten days' stay in Japan the Chairman also visited the I.C.I. (Japan) head office in Osaka and the Toyo Rayon Co.'s new 'Terylene' plant (see right)



Japan. Japan's first 'Terylene' plant, sited 65 miles south-west of Tokyo with Mt. Fuji in the background. The plant has been set up by the Toyo Rayon Co., one of I.C.I.'s two Japanese licensees



U.S.A. Sir Alexander Fleck presents a 30-year service award to Mr. H. S. MacLean, director of I.C.I. (New York) responsible for liaison with I.C.I.'s U.S. distributors. Sir Alexander was in New York on his way to Japan



Nigeria. The formal opening of I.C.I. (Export)'s new West African office in Lagos took place on 1st April. The 120 guests included Mr. E. A. Bingen, one of I.C.I.'s Overseas Directors (extreme left), the Nigerian Minister of Finance, Chief F. S. Okotie Eboh (left centre) and Adeniji Adele II, Oba of Lagos, seen with Mr. J. M. Wollaston, head of the West African branch



Kenya. Patients at the Magadi Soda Co.'s hospital include not only European and African employees but also these colourful Masai, photographed above with Mr. P. C. Allen (Fibres Group Director), who was at the hospital to meet patients and staff



Chile. The completion in almost half the estimated time of the transfer and erection of a liquid ammonia plant was celebrated on the site by the management, staff and workers of I.C.I. (Chile) with a barbecue

NEWS IN PICTURES



Medallists. Awarded jointly for the first time, this year's Royal Agricultural Society's research medal goes to the co-discoverers of hormone and carbamate weedkillers, Dr. W. G. Templeman (left), now deputy head of Jealott's Hill Research Station, and Dr. W. A. Sexton, a director of Pharmaceuticals Division



Veterans. Mr. C. Paine (I.C.I. Group A Director), the second member of the I.C.I. Board to complete 40 years' service, is seen above chatting to Messrs. F. J. Hawley, H. Gallagher and W. K. Macfarlane, who also received 40-year awards at the Head Office Long Service Dinner last month. Right: Mr. W. Southgate (Head Office commissionaire), who was born on the I.C. House site, receives his 20-year award from the Chairman



New training centre. Sir Ewart Smith formally opened Wilton's new apprentice and adult training centre on 30th April. Currently the centre is training over 600 apprentices and 1,000 adults each year. Above, right: Student apprentice R. S.



ab assistants, and some 2,700 adults will take part in training courses this year. Hall seconds a vote of thanks to Sir Ewart (extreme left)



Billingham bus tours. This 13-seater bus has been specially built for Billingham Division to take visitors on tours of the factory site



At Beaconsfield Youth Club the Duke of Gloucester meets Mr. W. McNab (Paints Division Overseas Dept.), chairman of the club's management committee



Celebration dinner. Two hundred people attended the dinner dance held by General Chemicals swimming section to celebrate the election of Mr. Alan Carter as chairman of the Cheshire Swimming Association. Guest of honour was Miss Diane Wilkinson, seen above with Mr. Carter



"Lady Roslin" launched "Lady Roslin," leaving the dock on 23rd April. Mrs. James Taylor, wife of I.C.I.'s Metals and Nobel Group Director, christened the ship, which is named after the old Roslin gunpowder



d. Nobel Division's new coaster, the m.v. ways of the Ardrossan Dockyard Company Taylor, wife of I.C.I.'s Metals and Nobel Group Director, christened the ship, which is named after the old Roslin gunpowder



Pensioners' lunch. 183 retired members of Head Office staff and six past directors of I.C.I., including the two ex-chairmen Lord McGowan and Mr. John Rogers, attended a luncheon held at the Café Royal in Regent Street



Champions. Checking targets after winning the British six-man team championship held at the I.C.I. indoor range at Witton are the Kynoch team (left to right) J. Hall, W. B. Godwin, A. Walmsley, T. J. Knight, A. D. Skinner (capt.) and C. J. A. Webb. (Photo: Birmingham Despatch and Mercury.)



£120 award. Mr. J. C. Lithgow, Paints Division Production Director, presents a cheque for £120 to Mr. W. J. Boast (Stowmarket factory) for suggesting improvements to the rail printing machine used for marking paint tins. The award was made under the I.C.I. Suggestion Scheme



Jubilee Plaque unveiled. Mr. J. C. Swallow (Plastics Division chairman), who was in charge of research at Alkali Division in 1933, unveils a plaque at Winnington laboratories to celebrate polythene's 25th birthday. The initials are those of R. O. Gibson and E. W. Farwell, the discoverers of polythene



Czech dancers at Witton. Two members of a Czech dance troupe who visited Kynoch Works recently. The troupe asked if they could stage a lunch-hour display in one of the works canteens in gratitude for I.C.I.'s contribution to the rebuilding of Lidice, the village completely wiped out by the Germans during the last war

My Underwater World

By A. S. Irvine

Drawing by Chater

Colour photograph by courtesy of Casa Editrice Gherardo Casini, Rome

THIS fascinating new world that later we came to love so well: that may seem an exaggerated description of the underworld of the sea. But world it was, some square mile of it above the five fathom line. After a relatively brief initiation, we came to know it better than the back streets of the village on the shore. For in this little Lyonesse of ours we floated like two amiable barrage balloons a few feet above the teeming lanes of a busy market town.

Hereamong the bare rocks were scores of varieties of fish, all hurrying along with the aimless intensity of the tube-bound crowds at five o'clock. And among these vacant faces that occasionally turned aside to stare unseeingly into our masks we recognised wild caricatures of a host of acquaintances.

In other areas it was more bucolic. Six feet below us there was little to see but waving forests of grass into which you could dive, turn on your back, and imagine yourself in a hayfield on a sunny day. This jungle was peopled with stranger beasts

—clam shells that lay open like gin-traps and clicked shut as your shadow caught them; anemones scarlet and gold, one moment waving luxuriant tresses, the next as tight-folded and as innocent-looking as rose-buds; crinoid sea-lilies looking like vast shaving brushes, then, at the slightest sound, snapping back into a dull khaki stem so quickly that it was hardly



This new world would completely enthrall us . . .



A Russian matchbox label showing a sputnik in its orbit is the latest acquisition of philumenist Walter Minshall, a foreman steamer captain with Alkali Division's fleet



Inventors of the future? Fibres Division director Mr. J. R. Whinfield, the discoverer of 'Terylene,' demonstrates to these schoolchildren at his recent lecture sponsored by the Royal Society of Arts



Central Council. Mr. S. P. Chambers (right) presents the I.C.I. Safety Cup to Leathercloth Division Managing Director Mr. G. Haddock at last month's Council at Scarborough. Above, centre: Mr. W. Cummings (Nobel Division), who was elected chairman of the workers' representatives



Hockey international. In the last international of the season England beat Scotland 2-0 and so won the triple crown, having previously outscored Ireland and Wales. The match was played on Dyestuffs Division's ground at Grangemouth



Compressed air tank strapped to his back, an underwater swimmer explores the sea bed

possible to believe that a great fan had ever been there.

The free-swimming inhabitants of this jungle, who peeped and fretted between the grass stems, were bovine and dull—to all appearances chewing the cud and yawning at the same time. Every now and then a huge green face followed by a huger green body lumbered round a corner, almost bumped into us and then hurried back into the grass with a churlish grunt. And all the time the multi-coloured pastels of the rocks and sand were relieved by the shining indigo of sea-urchins, big as apples—and as harmless, now that you could see and avoid them.

The beauty of this new world would completely enthrall us, while our backs grew brown in the bright sunshine. There we would float, minding everything but our own business, oblivious of the fact that the sun's rays were slanting more and more and that on shore the Angelus was calling all good people to their evening *apéritif*. Then suddenly, as though at a gunshot, the whole busy population would not be there and we would be left alone to a riot of submarine blues and greens streaked scarlet by the anemones.

The first time that this happened we were left wondering; the next time I was not to be caught unawares, and I had—for the first of countless times—the annoyance of seeing the harpoon from my arquebus pass harmlessly through a fast-moving school of silver bass—or whatever else is the voracious *loup des rochers*. The school passed—and all of a sudden everyone was back again, just as busy as ever.

On that trip, for all we knew our sunken territory, we never saw an octopus. But it was not surprising, because we needed what they call "octopus eyes." In other words, you can't find an octopus until you know what to look for, and you can't do that until you've found your octopus. My octopus eyes came one morning when, after a long and fruitless stalk of some eels that live in holes three or four fathoms down—the limit of my natural aqualungs—I came home tired and a trifle seasick. Coming out of the choppy water into the shelter of an arm of rock, I lay very still staring with unseeing eyes at the rocky shelf below me and swallowing hard.

Six feet in front of my eyes was a dark, weed-trimmed hole with a neat little semicircular wall of stones in front of it, and while I looked I saw something snakelike rip out and move the stones inwards to cover the hole. As I stared, two bright, golden, cat-like eyes met mine. Then there was a sudden puff of

black, and when that had cleared the hole was empty. But ever after the ring of stones and the dark hole gave me the clue, along with the tentacle waiting, suckers outwards, that I had always thought was weed.

Thereafter, when we got bored, we used to tease octopuses. Succulent as they were, we felt too benign that fine holiday to devote more than a couple to our inner use, so we—like the ancient gods of Olympus, who must have assumed a very similar viewpoint—had octopus-kind in derision.

Having octopus-kind in derision is distinctly a two-handed job, needing the teaser and the spotter. First you—the teaser—dive while the spotter remains floating above. The octopus eyes you balefully out of its hole and—judging to a nicety the exact time when your breath is going to give out—he suddenly gives you a puff of ink right in the face and slips away sideways. You then return for further lungfuls and to ask the spotter where the octopus has gone—it seldom goes more than a few yards—and you return to the chase.

And an interesting chase it is—once you've learned the creature's tricks. The first puff of ink from its hidey-hole is a smokescreen to cover its escape. It then makes for the nearest patch of weed, on which it settles and, with a startling abruptness, changes from its frog-like yellow and brown into a very good imitation of the wartime camouflage gas cape. You then dive and stir it up, so off it goes to a patch of bare rock or sand and turns such a ghastly grey that you feel quite sorry for it. You come to the surface, puff a bit, and dive again. This time the octopus shoots off into the upper reaches of the water, giving a tear-drop-shaped puff of ink en route—and then calmly turns the same dirty brown colour as its ink. After one or two more changes it slows down and you can catch it.

Quite subdued, it clings lovingly to your arm as you swim ashore, and affects a freckly frog colour that flatters your suntan. Then—just as you are about to rise triumphant from the waves—it gives you a derisive squirt and disappears under a rock, where it snuggles quite out of reach of your questing hand.

But what of our lovely Lyonesse today? Alas—with the Woolworthisation of goggle fishing equipment our little territory has become as crowded as Clapham Common on a fine Sunday. Body lies next to body, bumping greasily together, while undersea the colours have faded and the fish have left, all except the fingerlings, who have no fear of the multitudes bobbing above them or dancing wild headless fandangos in the shallows.



Pines and Poplars

Photo by A. Walker (Cassel Works)